

# Specification for establishing the suitability of special purpose concrete admixtures

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# Committees responsible for this British Standard

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- Brick Development Association
- British Cement Association
- British Precast Concrete Federation Ltd.
- Cement Admixtures Association
- CERAM Research Ltd.
- Concrete Society
- Quarry Products Association
- Institute of Concrete Technology
- Institution of Civil Engineers
- Society of Chemical Industry
- ODPM — Represented by BRE
- Co-opted members

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## Foreword

This British Standard has been prepared by Subcommittee B/517/3.

It is intended to establish the suitability of seven categories of special purpose concrete admixtures that are in widespread use in the United Kingdom and that are not covered by BS EN 934-2, *Admixtures for concrete, mortar and grout — Part 2: Concrete admixtures — Definitions, requirements, conformity, marking and labelling*.

The requirements follow the format established by BS EN 934-2. However, for some of the admixtures, there is no internationally agreed laboratory test available to measure their effectiveness in relation to the primary function. In these cases, the effectiveness is required to be agreed between the manufacturer and purchaser.

This British Standard calls for the use of substances and/or procedures that may be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

**Compliance with a British Standard does not of itself confer immunity from legal obligations.**

### Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 13 and a back cover.

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## 1 Scope

This British Standard specifies terms, definitions and requirements for special purpose admixtures in order to establish suitability for use in concrete conforming to BS EN 206-1.

The admixtures covered are listed as follows; they are intended for use in plain, reinforced, foamed, prestressed and semi-dry concrete as appropriate. The concrete can be site mixed, ready mixed or pre-cast:

- underwater concrete admixtures;
- shrinkage reducing admixtures;
- corrosion inhibiting admixtures;
- pumping aids;
- segregation reducing admixtures;
- foaming admixtures;
- semi-dry concrete admixtures.

Provisions governing the practical application of admixtures in the production of concrete, i.e. requirements concerning composition, mixing, placing, curing, etc. of concrete containing admixtures are not within the scope of this standard.

## 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the reference cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS EN 206-1, *Concrete — Part 1: Specification, performance, production and conformity*.

BS EN 480-1, *Admixtures for concrete, mortar and grout — Test methods — Part 1: Reference concrete and reference mortar for testing*.

BS EN 480-2, *Admixtures for concrete, mortar and grout — Test methods — Part 2: Determination of setting time*.

BS EN 480-6, *Admixtures for concrete, mortar and grout — Test methods — Part 6: Infrared analysis*.

BS EN 480-8, *Admixtures for concrete, mortar and grout — Test methods — Part 8: Determination of the conventional dry material content*.

BS EN 480-10, *Admixtures for concrete, mortar and grout — Test methods — Part 10: Determination of the water soluble chloride content*.

BS EN 480-12, *Admixtures for concrete, mortar and grout — Test methods — Part 12: Determination of the alkali content of admixtures*.

BS EN 934-2, *Admixtures for concrete, mortar and grout — Part 2: Concrete admixtures — Definitions, requirements, conformity, marking and labelling*.

BS EN 934-3, *Admixtures for concrete, mortar and grout — Part 3: Admixtures for masonry mortar — Definitions, requirements, conformity, marking and labelling*.

BS EN 934-6, *Admixtures for concrete, mortar and grout — Part 6: Sampling, conformity control and evaluation of conformity*.

BS EN 12350-2, *Testing fresh concrete — Part 2: Slump test*.

BS EN 12350-6, *Testing fresh concrete — Part 6: Density*.

BS EN 12350-7, *Testing fresh concrete — Part 7: Air content — Pressure method*.

BS EN 12390-1, *Testing hardened concrete — Part 1: Shape, dimensions and other requirements for specimens and moulds*.

BS EN 12390-3, *Testing hardened concrete — Part 3: Compressive strength of test specimens*.

BS EN 12620, *Aggregates for concrete*.

ISO 649-2, *Laboratory glassware — Density hydrometers for general purposes — Part 2: Test methods and use*.

ISO 4316, *Surface active agents — Determination of pH of aqueous solutions — Potentiometric method*.

### 3 Terms, definitions, symbols and abbreviations

#### 3.1 Terms and definitions

For the purposes of this standard, the following terms and definitions apply.

##### 3.1.1 *General terms and definitions*

###### 3.1.1.1

###### **performance**

ability of an admixture to be effective in its intended use without detrimental effects

###### 3.1.1.2

###### **compliance dosage**

dosage of an admixture, expressed as percent by mass of cement, stated by the manufacturer, which will meet the requirements of this standard. The compliance dosage is within the recommended range of dosage

###### 3.1.1.3

###### **recommended range of dosage**

dosage between limits expressed as percent by mass of cement, which the manufacturer recommends for the product, based on experience in use

NOTE The use of the recommended dosage does not imply that compliance with this standard will be met over the whole range. Trial tests should be carried out with the materials to be used on site to find the dosage necessary to achieve the required performance.

###### 3.1.1.4

###### **maximum recommended dosage**

upper limit of the recommended range of dosage

###### 3.1.1.5

###### **reference concrete**

concrete composition specified for testing admixtures for conformity with this standard

###### 3.1.1.6

###### **reference mortar**

mortar composition specified for testing admixtures for conformity with this standard

###### 3.1.1.7

###### **primary function**

a single function of a multifunction admixture designated by the manufacturer

###### 3.1.1.8

###### **general requirements**

requirements that characterize the admixture by physical and chemical measurements

###### 3.1.1.9

###### **specific requirements**

requirements that characterize the performance of the admixture in a cementitious mix

##### 3.1.2 *Specific terms and definitions*

###### 3.1.2.1

###### **admixtures for concrete**

materials added during the mixing process of concrete, in a quantity not normally exceeding 5 % by mass of the cement content of the concrete, to modify the properties of the mix in the fresh and/or hardened state

###### 3.1.2.2

###### **underwater concrete admixture**

admixture that significantly reduces the washout of cement during the underwater placing and hardening of concrete

###### 3.1.2.3

###### **shrinkage reducing admixture**

admixture that, without water reduction, brings about a significant reduction in drying shrinkage of concrete